

# MEASLES UPDATE

National Immunization Program (NIP), Centers for Disease Control & Prevention  
Measles Activity in U.S. through Week 52 (December 31, 2005)

No. of confirmed measles cases reported to MMWR by Week 52, 2005:	62
No. of confirmed measles cases reported to NIP by Week 52, 2005:	67
No. of confirmed measles cases reported for same period in 2004:	37
Total No. of U.S. outbreaks (3 or more linked cases) in 2005:	3

As of Week 52 (ending December 31, 2005), a provisional total of 62 measles cases were reported for the Morbidity and Mortality Weekly Report (MMWR) compared to 37 measles cases in 2004. **Four records reported for the MMWR are being removed by the Utah (4). Five case records to be reported to the MMWR include 1 from Oregon (import from Egypt/Saudi Arabia); 1 from Washington (import from Romania); 1 from New York city (import from Bangladesh); 1 from New Hampshire (import from Belgium); and 1 from California (import from Asia).**

The 2005 measles cases reported to NIP as of February 10, 2006 are listed by dates of rash onset in Table 1 (NIP's provisional total = 67). Please notify NIP of any changes to Table 1 and report any outstanding cases to the MMWR. Measles cases were reported by 16 states during 2005: Arizona – 1; California – 4; Delaware – 1; Hawaii – 2; Indiana – 33; Illinois – 2; Michigan – 1; New Hampshire – 1; New Jersey – 2; New York – 1; New York City – 6; Oregon – 2; Ohio – 3; Tennessee – 1; Texas – 3; Washington – 2 and Wisconsin – 2.

Ninety-four percent (63/67) of the 2005 measles cases were import-associated which includes 25 imported cases and 38 with epi-link to an imported case. There were 4 unknown source cases.

Source countries (based on travel history) for the 25 imported cases were: Armenia (1); Belgium (1); Bangladesh(1); China (1); Egypt/Saudi (2); France (1); Germany (2); Hong Kong/Cambodia/Thailand (1); India (2); Indonesia (1); Kenya (1);Thailand (3); Mexico (3); Nigeria (1); Pakistan (1); Romania (2); Yemen (1).

## **Confirmed Measles reported to NIP during September – December '05:**

### **OHIO** – 1 import from Nigeria and 2 spread cases

Miami County, Ohio reported measles in a 6-year-old male from Nigeria who arrived in Dayton on 8/14/05. The child was hospitalized on 8/22/05 (onset **8/18/05**). Two spread cases include a 43 year old unimmunized Physician Assistant at the hospital directly linked to the import and a 89-year-old at the hospital. The 43-year-old Physician Assistant did not have direct contact with the 89 year old but was in the hospital shortly before the 89-year-old arrived.

### **NEW YORK CITY** - 1 out of state import from Puerto Rico

Brooklyn confirmed measles in a 11-month old female U.S. resident, rash onset **9/8/05**. The child had been staying with grandparents in Bayamon, P.R. from 06/28–09/02/05. Puerto Rico officials were notified – no other cases were found.

### **NEW JERSEY** - 1 import from Kenya

New Jersey reported measles in a 17-year-old male *refugee* from Nairobi. The teen came from the Eastleigh Community of Nairobi where a measles outbreak was occurring. His symptoms upon arrival in the U.S. on 11/9/05 included fever, cough and Koplik's spots. His rash began on **11/12/05**. Confirmatory tests were done in New Jersey and a viral specimen was sequenced at CDC. The genotype is B3. Resettlement flights to the U.S. from Eastleigh community settlements in Nairobi were postponed during this time due to the measles outbreak.

### **WASHINGTON** – 1 import Romania

Washington State reported measles in a 8-month-old foreign visitor to Seattle, who arrived from Romania on 11/10/05. She developed fever to 102 F then several days later rash began **11/16/05**. Serum and a viral culture received at CDC confirmed measles. The nasopharyngeal swab was positive by PCR. The genetic sequence is D4, identical to the sequences of viruses from the Indiana outbreak in May-June '05, which was also associated with an import from Romania.

### **NEW HAMPSHIRE** – 1 import from Belgium

New Hampshire reported lab confirmed measles in a 52-year-old U.S. resident who traveled to Belgium on 11/5 – 11/9/05. Prodromal symptoms began 11/19/05 followed by rash onset **11/23/05**. There were several exposure sites with multiple contacts including a dental office in New Hampshire, a workplace in Massachusetts; a workplace in New Hampshire; and the NH hospital where the case-patient was admitted on 11/25/05. CDC received 6 serum specimens for immunity testing on health care workers in NH who were exposed to this measles case. Testing by CDC indicated the HCWs were immune. No additional cases were reported.

**TEXAS** – 3 case outbreak in Houston family

The index case was a 38-year-old female hospitalized in Houston with measles, rash onset **12/10/05**. The case had traveled to Cabos San Lucas, Mexico for a family reunion attended by 48 other family members during 11/22 – 11/27/05. The majority of the family members lived in Houston (30 persons) with 18 others from Dallas, Los Angeles and Colorado. The index case was hospitalized with pneumonia and was highly IgM positive for measles at both the Texas and CDC laboratories. No other cases were reported in Los Cabos. The other 2 Houston cases found during investigation include a 20 month old nephew to the index (w/rash onset **12/4/05**) and his 35 year old mother (w/rash onset **12/7/05**). The 20 month old was vaccinated at 12 months of age. The 3 cases had flown to and from the reunion together (11/22/05 and 11/27/05). No other cases were identified related to this outbreak. CDC sequenced the virus and it is genotype B3.

**NEW YORK CITY** – 1 import from Bangladesh

Measles was confirmed in a U.S. born 12-month-old from Queens who returned from Bangladesh on 12/17/05. Her rash onset date was **12/15/05**. The 12-month-old had coryza and a 3-day fever that ended on 12/18/05. She returned to U.S. via JFK on 12/17/05 after 4 months in Bangladesh. She was diagnosed with measles on 12/16/05 prior to leaving Bangladesh. After returning home the baby was seen by a physician. Blood drawn on 12/21/05 was IgM positive in the NYC and CDC labs. Viral cultures were unsuccessful on a nasopharyngeal swab and urine specimen obtained on 12/28/05. The flight manifests were obtained and letters of notification were sent to passengers.

**Table 1**  
**U.S. MEASLES cases in 2005 reported by rash onset (Provisional total 67 cases)**  
**Cases in bold are those reported in last quarter 2005**

#	Proj	Age	Rash onset	Vacc	Spread Cases?	Reported To MMWR	Viral Specimens Received	'05 MEASLES as of Feb 10, 2006 Comments / Source Information
01 Imp	NYC	11 mo old male	1/2/05	No	Yes, 1	Yes	Yes, D9	IMPORT, Brooklyn resident returning Jan 1 after 1 month family visit to Indonesia. 1 hospital setting spread case below.
02 Trac	NYC	1 yr old male	1/16/05	After Exposure to case 1	No	Yes	No	This child from Manhattan was vaccinated after ER exposure to the import from Indonesia. He received vaccine on 1/7/05, 9 days prior to rash onset. Symptoms included rash, fever 102.7; conjunctivitis, coryza, cough & diarrhea.
03 Imp	NYC	70 yr old male	1/10/05	No	No	Yes	Yes, D8	Single IMPORT, India U.S. resident returned from India on Jan 5
<b>04 Unk</b>	<b>NJ</b>	<b>37 yr old</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>Yes</b>	<b>No</b>	<b>Morris County; extended data variables in NETSS are missing</b>
05 Imp	AZ	28 yr old male	1/17/05	No	No	<b>Yes, but not coded as import</b>	Yes, D6	Visiting scholar arrived 1/17 from Armenia Foreign visitor – This case needs to be flagged as “import” in NETSS; currently listed as indigenous
06 Imp	NYS	12 mo old male	2/26/05	No	No	<b>Yes, but not coded as import</b>	Yes, D8	Westchester County resident Returned from India on 2/22/05.
07 Imp	OR	29 yr old male	2/11/05	Yes, verbal dates	No	<b>Yes, but not coded as import</b>	No	Imp (foreign born college student) returning from Cairo/Saudi Arabia on 1/29/05; could have infected brother case but both are imports; vax in Egypt at 11 mo & 12 mo. Both bros had resided in US for >12 mos.
08 Imp	OR	32 yr old male	2/18/05	Unk, No dates	No	<b>Yes, but Not coded as confirmed</b>	No	Import from Cairo/Saudi Arabia Verbal history of vaccination in Egypt during childhood; no documentation. Traveled w/brother above. Needs to be changed to a confirmed case in NETSS.

#	Proj	Age	Rash onset	Vacc	Spread Cases?	Reported To MMWR	Viral Specimens Received	'05 MEASLES as of Feb 10, 2006 Comments / Source Information
09 Imp	HI	27 yr old male	2/17/05	No, PBE	No	Yes	No	Import from Thailand U.S. Resident / Maui Unvaccinated / Personal Belief Exemption
10 Imp	DE	44 yr old	2/18/05	Unk	No	Yes	No	Import from Thailand/ Laos Foreign born U.S. resident, Verbal history of vaccine
11 Imp	CA	33 yr old male	2/26/05	No, PBE	Yes, 1	Yes	No	San Diego Import (U.S. resident) source Germany Infected his 25 year old brother. Not vaccinated due to personal beliefs.
12 Trac	CA	25 yr old male	3/17/05	No, PBE	No	Yes	No	Brother to above case Traceable to Import / Germany This case was vacationing in Puerto Rico during his infectious period . No known spread. Not vacc due to personal beliefs.
13 Imp	NYC	40-year-old male	3/3/05	No	No	Yes	Yes, but unsuccessful	Import Thailand; foreign born U.S. resident; returned to U.S. on 3/1/05
14 Imp	WI	47 yr old male	4/3/05	No	No	Yes	See D4 from secondary case	U.S. resident, import from Frankfurt, Germany. Went to Germany on 3/17; returned to U.S. on 3/29. Prodromal 3/31. One unimmuniz contact w/symptoms was confirmed below.
15 Trac	WI	15 yr old female	4/16/05	No	No	Yes	Yes, D4	Traceable to import from Germany
16 Unk	HI	10 mo old male	4/23/05	No	No	Yes	No	Unknown source
17 Unk	CA	9 mo old female	4/23/05	No	No	Yes	No	Military Dependent reported by AFB Source unknown
18 Imp	IN	17 yr old female	5/16/05	No. PBE	Yes, 19 cases in first generation	Yes	Yes, D4 for the outbreak	Index case in a 34 case outbreak Indiana (33 ) and IL (1) U.S. resident unimmunized for Personal beliefs visited Romania Source: Romania
19-50 Trac	IN	9 mos to 45 years	5/26 – 6/24/05	2 of 34 had hx of vax	12 cases in 2 <sup>nd</sup>  2 cases in 3 <sup>rd</sup>	Yes	Yes – D4 for the Outbreak (D4 was sequenced fr 8 cases)	34 case outbreak among a group not routinely accepting vaccinations. Only one case occurred outside of the community. Two of 34 cases were vaccinated. Health care worker survived but was in ICU w/complications; History of 1 MMR.
51 Trac	IL	12 year old male	5/29/05	No	No	Yes	Yes, D4	First generation case. Exposed to index while visiting family in Indiana
52 Imp	IL	8 year old female	5/31/05	Yes, MMR @ 15mos	No	Yes, but Not as import	Yes, unsuccessful	Import in Chicago from Pakistan U.S. Resident had been with family in Pakistan 7 months, returned 5/23/05. Needs to be coded as "import" in NETSS; child was hospitalized 5/29-6/3. Rubella IgG was negative – vax failure. Never got second dose.

#	Proj	Age	Rash onset	Vacc	Spread Cases?	Reported To MMWR	Viral Specimens Received	'05 MEASLES as of Feb 10, 2006 Comments / Source Information
53 Imp	TN	24 yr old male	7/21/05	Yes, 9 mos & 1 yr	No	Yes	No	U.S. Resident Source is CHINA Returned 6/29/05
54 Imp	CA	48 yr old female	8/8/05		No	No	No	U.S. Resident (Riverside County) with international travel to Hong Kong, Cambodia, Thailand July 1-28.
55 Imp	MI	12 yr old male	8/15/05	Unk	No	Yes	Yes, D4	Import from Yemen Infectious on flights Frankfurt into Detroit Case is an immigrant
56 Imp	OH	6 yr old male	8/16/05	Unk	Yes, 1	Yes	No	Import from Nigeria arrived 8/13/05 Hospitalized 8/22— Flew Amsterdam –Detroit-Dayton 1 hospital employee and 1 patient infected OUTBREAK = yes
57 Imp	WA	43 yr old male	8/20/05	Unk	Unk	No	Yes, D4	U.S. Resident Source is international meeting held in France July 31-Aug 5. Case toured a few days prior and after the event . Met case definition. IgM positive on 8/24/05.
58 Trac	OH	43 yr old female	9/7/05	No	Yes, 1	Yes	No	Traceable to Import from Nigeria above. Health Care worker OUTBREAK = yes Infected 89 year old below at the hospital
59 Trac	OH	89 yr old male	9/14/05	No	No	Yes	No	Traceable to 43 year old above OUTBREAK = yes
60 Unk	NYC	11 mo old	9/7/05	No	No	Yes	Yes, un-Successful	Travel to Puerto Rico 6/28/05 – 9/2/05
61 Imp	NJ	17 yr old male	11/12/05	No	No	Yes, but not coded as import	Yes, B3	Import from Nairobi, Kenya Eastleigh Community Refugee
62 Imp	WA	8.5 mo old female	11/16/05	No	No	No	Yes, D4	Import from Romania Foreign visitor arrived 11/10/05
63 Imp	NH	52 yr old male	11/23/05	Unk	No	No	No	U.S. resident returned from Belgium Nov 9, 2005; symptoms on Nov 19
64 Imp	TX	35 yr old female	12/7/05	Yes	See Below	Yes	No but see B3 from family members below	U.S. resident returning from family reunion in Cabo San Lucas (mom of 20-month old below). The 35 year old believes she had a dose of MCV years ago. Her clinical picture was mild.
65 Imp	TX	20 mo old male	12/4/05	Yes, @ 12 mos	See below	Yes	Yes, B3	U.S. resident returning from family reunion in Cabo San Lucas (nephew of 38 year old Aunt below)
66 Imp	TX	38 year old female INDEX	12/10/05	No	No	Yes	Yes, B3	U.S. resident returning from family reunion in Cabo San Lucas This is the index case (Aunt to 20 month old); hospitalized w/pneumonia
67 Imp	NYC	12 mo old female	12/15/04	No	No	No	Yes, unsuccessful	12 month old lives in Queens; Spent 4 months in Bangladesh Returned to U.S. 12/17 (rash 12/15/05)

2005 Measles Outbreaks (3 or more linked cases)						Shaded= IMPORTED source
	Proj	Location(s)	1 <sup>st</sup> & Last Rash Onsets	# Conf Cases	Ages (or range)	Comments
1	INDIANA	Tippecanoe, Clinton, White Counties	May 16* June 24, 2005	34	9 mos – 45 yrs	Source is Romania Outbreak among group not routinely accepting vaccinations.
2	OHIO	Miami County	August 17* Sep 7, Sep 14	3	6 years, 43 yrs, 89 yrs	Source is Nigeria. 3-case outbreak of includes 6 year old from Nigeria, 43-year-old HCW and 89-year old at the hospital.
3	TEXAS	Houston	Dec 4, 5, 10*  * <b>Index cases</b>	3	20 mos 35 yrs 38 yrs*	Source could be Cabo San Lucas or Houston. 3 family members left Houston to attend family reunion in Cabo San Lucas, Mexico Genotype B3

Visit REVB's Molecular Surveillance Website at: <http://www.cdc.gov/ncidod/dvrd/revb/measles/index.htm>

#### US Genotyping Results 2005

State	First & last rash date	Geno type	Comments	No. cases identified
TX	12/4-12/10/05	B3	Import: Travel to Cabo San Lucas	3
WA	11/16/05	D4	Import: Romania	1
NJ	11/09/05	B3	Import: Kenya	1
WA	8/20/05	D4	Inter'l conference: Paris	1
MI	8/16/05	D4	Import: Yemen	1
IN	5/16-6/23/05	D4	Import: Romania	33
IL	5/26/05	D4	Spread from IN	1
WI	4/16/05	D4	Import: Germany	2
NY	2/26/05	D8	Import: India	1
AZ	1/17/05	D6	Import: Armenia	1
NY	1/10/05	D8	Import: India	1
NY	1/2/05	D9	Import: Indonesia	1

Please send questions or comments to Gustavo Dayan M.D. , MMR Activity at NIP; or to Ms. Susan B. Redd at [sbr1@cdc.gov](mailto:sbr1@cdc.gov); fax (404) 639-8665 or ph (404) 639-8763.